



## Study Guide

# MPH-521: Epidemiology and Prevention of Non-communicable and Infectious Diseases in a Global Context

<b>Institution</b>	University of Nicosia		
<b>Programme of Study</b>	Master of Public Health		
<b>Module</b>	MPH-521: Epidemiology and Prevention of Non-communicable and Infectious Diseases in a Global Context		
<b>Level</b>	Undergraduate <input type="checkbox"/>	Postgraduate (Master) <input checked="" type="checkbox"/>	
<b>Language of Instruction</b>	English		
<b>Mode of Delivery?</b>	Distance Learning <input checked="" type="checkbox"/>	Conventional <input type="checkbox"/>	
<b>Type of Course</b>	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	
<b>Number of Group Advising Meetings/Teleconferences/Lectures</b>	Total:  47	With Physical Presence  0	On-line:  47
<b>Assessment</b>	<ul style="list-style-type: none"><li>• Participation</li><li>• Assignments</li><li>• Exams</li></ul>		
<b>Number of ECTS credits</b>	10		

Preparation of Study Guide by:	Angeliki Lambrou
Review and approval of study Guide by:	Christiana Demetriou

<b>i. Teaching Faculty</b>
Dr Angeliki Lambrou, Dr Christiana Demetriou
<b>ii. Course:</b>
<p><b>Brief description of Course and Aims</b></p> <p>This course aims to cover in depth the descriptive and analytic epidemiology of major non-communicable and infectious diseases in a global context, highlighting aetiological models of disease development, as well as methodologies and initiatives for their prevention and control.</p> <p>The main learning objectives of the course are to enable students to:</p> <ol style="list-style-type: none"> <li>1. Analyse the epidemiology of the major non-communicable and infectious conditions causing the biggest burden on developed and developing societies and critically evaluate national and international preventive initiatives aiming at tackling these.</li> <li>2. Relate and contrast the different epidemiological paradigms for the aetiology of non-communicable conditions, as well as major emerging and re-emerging infectious conditions in developed and developing societies.</li> <li>3. Evaluate the global impacts of climate change on the epidemiology of major non-communicable and infectious conditions, including the connection between habitat loss, impact on species and potential for zoonotic transmission and appreciate the near-term health co-benefits that arise because of climate mitigation.</li> <li>4. Analyse the dynamics of infectious disease outbreak and apply measures of control and surveillance.</li> <li>5. Analyse the epidemiology of major emerging and re-emerging infectious conditions in the developed and developing world and apply the concept of migrant/refugee health in the context of infectious disease.</li> <li>6. Analyse the principles of immunization and the basic methodologies involved in the design of such programmes, also highlighting the phenomenon of vaccine hesitancy.</li> </ol> <p><b>Expected Learning Outcomes</b></p> <ul style="list-style-type: none"> <li>• Analyse the epidemiology of cardio metabolic and cerebrovascular conditions in the developed and the developing world.</li> <li>• Analyse the epidemiology of malignancies in the developed and the developing world.</li> <li>• Analyse the epidemiology of dementia and other neurodegenerative conditions in the developed and the developing world.</li> <li>• Analyse the epidemiology of mental health conditions in the developed and the developing world.</li> <li>• Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.</li> <li>• Compare and contrast the major epidemiological paradigms for the aetiology of non-communicable conditions (adult life risk factors, early life biological programming, and life-course effects).</li> <li>• Evaluate how climate change can impact on the epidemiology of major non-communicable and infectious conditions, including the connection between habitat loss, impact on species and potential for zoonotic transmission.</li> </ul>

- Evaluate the near-term health co-benefits that arise because of climate mitigation at the individual, local, and global scales and provide examples of sectoral policies at the European and national level that can reduce greenhouse gas emissions and improve health.
- Access and interpret relevant local, national, European and global information and accurate science about climate change effects on health and the epidemiology of major non-communicable and infectious conditions.
- Analyse the phenomenon of emerging infectious diseases, their determinants and the current response approaches.
- Analyse the main objectives of epidemiological surveillance and distinguish its major types.
- Analyse the characteristics of incubation period, transmission, and communicability of microbes and relate these with the spread of diseases in the population.
- Analyse the modes of epidemic initialisation and the types of epidemics.
- Apply all steps of an outbreak investigation considering the main objectives of infectious disease epidemic investigation.
- Analyse the major epidemiological characteristics of selected major infectious diseases for public health (e.g. HIV/AIDS, tuberculosis, influenza, diarrhoeal disease, malaria) in the developed and developing world.
- Apply modes of prevention and control of infectious diseases and relevant measures and relate these with the mode of transmission.
- Evaluate the objectives and the content of the Expanded Program on Immunization (EPI) of the World Health Organization.
- Analyse the 'epidemiological profile' of migrants/refugees and the healthy immigrant effect and critically evaluate the myths prevailing regarding this specific issue in modern societies.

#### Teaching Material

- Weekly PowerPoint presentations
- Bibliography
  - Required
    1. Remington LP, Brownson RC, Wegner MV, Chronic Disease Epidemiology, Prevention and Control (4<sup>th</sup> ed.), American Public Health Association (2016).
    2. Giesecke, J, Modern Infectious Disease Epidemiology (3rd ed), CRC Press (2017).
    3. Nelson K.E and Williams C, Infectious Disease Epidemiology: Theory and Practice (3rd ed), Jones & Bartlett Learning (2013).
  - Recommended
    1. Control of Communicable Diseases Manual (20th ed.), Heymann DL, American Public Health Association (2014).
    2. Sick Societies: Responding to the Global Challenge of Non-communicable Disease, Stuckler D, Siegal K, Oxford University Press (2011).
    3. Oxford Textbook of Global Public Health (6th ed.) ONLINE, Detels R, Gulliford M, Abdool-Karim Q, Tan CCOxford University Press (2015).
    4. Epidemiology and Prevention of Cardiovascular Disease: A Global Challenge(2nd ed.), Labarthe DR , Jones & Bartlett Learning (2011).
    5. Cancer Epidemiology: Principles and Methods, dos Santos Silva I, IARC (1998).
    6. The Strategy of preventive medicine, Rose G., Oxford University Press (1993).
    7. Environmental Health: From Global to Local (3rd ed.), Frumkin H. Wiley, (2016), Chapters 12, 13, 24.
    8. Modern Infectious Disease Epidemiology, Krämer A, Kretzschmar M, Krickeberg K., Springer (2010).
    9. People's Movements in the 21st Century - Risks, Challenges and Benefits, Muenstermann I., IntechOpen (2017).

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<b>ECTS Credits</b>				
Compulsory module corresponding to 10 ECTS.				
<b>iii. Each Main Topic/Thematic Area:</b>				
The details for each topic are provided in the respective week that follows in the given study guide.				
<b>iv. Teaching Timetable</b>				
<b>Week</b>	<b>Topic &amp; objective</b>	<b>Readings</b>	<b>Study Hours required</b>	<b>Assessed work &amp; WebEx meetings</b>
1	<ul style="list-style-type: none"> <li>Analyse the epidemiology of cardio metabolic and cerebrovascular conditions in the developed and the developing world.</li> <li>Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemiology of major non-communicable conditions I: Cardiometabolic &amp; cardiovascular conditions)</li> <li>PPT presentation (Epidemiology of major non-communicable conditions I: Famous Studies)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Welcome video by Course Lead (Introduction to the Course, outline of course objectives, introduction to the course lecturers)</li> <li>H5P Tool (<b>Mandatory Activity</b> on cardiometabolic &amp; cerebrovascular conditions)</li> <li>Discussion Forum (Epidemiology of cardiometabolic &amp; cerebrovascular conditions in a country of your choice)</li> </ul>
2	<ul style="list-style-type: none"> <li>Analyse the epidemiology of malignancies in the developed and the developing world.</li> <li>Apply the principles of prevention for tackling major non-communicable</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemiology of major non-communicable conditions II: neoplastic conditions)</li> <li>PPT presentation (Respiratory &amp;</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Q&amp;A Forum (Neoplastic conditions)</li> <li>Webinar session (Epidemiology of neoplastic conditions in a country of your choice)</li> </ul>

	disease epidemics and design preventive programmes for dealing with these in developed and developing countries.	musculoskeletal conditions )		
3	<ul style="list-style-type: none"> <li>Analyse the epidemiology of dementia and other neurodegenerative conditions in the developed and the developing world.</li> <li>Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemiology of major non-communicable conditions III: dementia)</li> <li>PPT presentation (Epidemiology of major non-communicable conditions III: Parkinson's disease)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>H5P Tool (Forum on neurodegenerative diseases)</li> <li>Discussion Forum (Epidemiology of neurodegenerative diseases in a country of your choice)</li> </ul>

4	<ul style="list-style-type: none"> <li>Analyse the epidemiology of mental health conditions in the developed and the developing world.</li> <li>Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemiology of major non-communicable conditions IV: mental health conditions)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Interactive activity on the epidemiology of mental health conditions</li> <li>Webinar Session (Assignment support webinar: Summative written assessment on non-communicable disease prevention in developed versus developing countries)</li> </ul>
5	<ul style="list-style-type: none"> <li>Compare and contrast the major epidemiological paradigms for the aetiology of non-communicable conditions (adult life risk factors, early life biological programming, and life-course effects).</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemiological paradigms for the aetiology of non-communicable conditions: adult life risk factors)</li> <li>PPT presentation (Epidemiological paradigms for the aetiology of non-communicable conditions: early life programming)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Webinar Session (Preconception health and care)</li> <li>Q&amp;A Forum (<b>Mandatory Activity:</b> Epidemiological paradigms)</li> </ul>

		<ul style="list-style-type: none"> <li>• PPT presentation (Epidemiological paradigms for the aetiology of non-communicable conditions: life-course epidemiology)</li> </ul>		
6	<ul style="list-style-type: none"> <li>• Evaluate how climate change can impact on the epidemiology of major non-communicable and infectious conditions, including the connection between habitat loss, impact on species and potential for zoonotic transmission.</li> <li>• Evaluate the near-term health co-benefits that arise because of climate mitigation at the individual, local, and global scales and provide examples of sectoral policies at the European and national level that can reduce greenhouse gas emissions and improve health.</li> </ul>	<ul style="list-style-type: none"> <li>• PPT presentation (Climate change and its impact on the epidemiology of major non-communicable and infectious conditions)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>• Webinar Session (Identify and interpret relevant local, national, European, and global information and accurate science about climate change effects on health and the epidemiology of major non-communicable and infectious conditions)</li> </ul>

	<ul style="list-style-type: none"> <li>• Access and interpret relevant local, national, European, and global information and accurate science about climate change effects on health and the epidemiology of major non-communicable and infectious conditions.</li> </ul>			
7	<ul style="list-style-type: none"> <li>• Analyse the phenomenon of emerging infectious diseases, their determinants, and the current response approaches.</li> </ul>	<ul style="list-style-type: none"> <li>• PPT presentation (Emerging Infectious Diseases)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>• Webinar Session (Assignment Guidelines: COVID- 19 Student Country Profile)</li> <li>• Webinar Session (Ebola Virus Disease)</li> </ul>
8	<ul style="list-style-type: none"> <li>• Analyse the main objectives of epidemiological surveillance and distinguish its major types.</li> </ul>	<ul style="list-style-type: none"> <li>• PPT presentation (Epidemiological Surveillance)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>• Webinar Session (Setting up a surveillance system)</li> </ul>
9	<ul style="list-style-type: none"> <li>• Analyse the characteristics of incubation period, transmission, and communicability of microbes and relate these with the spread of diseases in the population.</li> </ul>	<ul style="list-style-type: none"> <li>• PPT presentation (Special concepts in infectious diseases)</li> <li>• PPT presentation</li> </ul>	15 hours & 20 hours Assignment Preparation	<ul style="list-style-type: none"> <li>• Q&amp;A Forum (Differentiating between the main concepts in infectious diseases)</li> <li>• Q&amp;A Forum (<b>Mandatory Activity:</b> Identifying the Chain Infection)</li> </ul>

		(Spread dynamics)		
10	<ul style="list-style-type: none"> <li>Analyse the modes of epidemic initialisation and the types of epidemics.</li> <li>Apply all steps of an outbreak investigation considering the main objectives of infectious disease epidemic investigation.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemics and infectious disease outbreak investigation)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Webinar Session (Case study on infectious disease event)</li> <li>Q&amp;A Forum (<b>Mandatory Activity</b>: Disease Epidemic occurrence)</li> </ul>
11	<ul style="list-style-type: none"> <li>Analyse the major epidemiological characteristics of selected major infectious diseases for public health (e.g. HIV/AIDS, tuberculosis, influenza, diarrhoeal disease, malaria) in the developed and developing world.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Epidemiology of major infectious diseases I)</li> <li>PPT presentation (Epidemiology of major infectious diseases II)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Webinar Session (COVID-19 Student Country Profile)</li> <li>Q&amp;A Forum (Epidemiology of infectious diseases)</li> </ul>
12	<ul style="list-style-type: none"> <li>Apply modes of prevention and control of infectious diseases and relevant measures and relate these</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Measures of prevention and control of infectious diseases)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Webinar Session (Measures of prevention and control taken in real case scenario)</li> <li>Online Chat (<b>Mandatory Activity</b>: Control of real-life outbreak or infectious disease event)</li> </ul>

	<p>with the mode of transmission.</p> <ul style="list-style-type: none"> <li>Evaluate the objectives and the content of the Expanded Program on Immunization (EPI) of the World Health Organization.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Expanded Program on Immunization)</li> </ul>		
13	<ul style="list-style-type: none"> <li>Analyse the 'epidemiological profile' of migrants/refugees and the healthy immigrant effect and critically evaluate the myths prevailing regarding this specific issue in modern societies.</li> </ul>	<ul style="list-style-type: none"> <li>PPT presentation (Migrant health and infectious diseases)</li> </ul>	15 hours	<ul style="list-style-type: none"> <li>Webinar Session (Migrant crisis in Europe and healthy immigrant effect)</li> <li>Discussion Forum (Migrant Health)</li> </ul>
14	<ul style="list-style-type: none"> <li>n/a (student revision for exams)</li> </ul>	n/a	30 hours	<ul style="list-style-type: none"> <li>Webinar Session (Course Revision)</li> </ul>

**v. Teaching methods**

Teaching material including PowerPoint presentations with extended descriptions and explanations, asynchronous video presentations, additional readings (journal articles and e-books), access to additional videos and commercials related to the module, synchronous meetings (WebEx), forums, chats, quizzes, case studies and other formative and summative assessments.

**vi. Written work – Exams – Assessment**

This course is assessed via a combination of summative assignments and exams.

**Written Exams**

**Final Exam:**

Students are expected to undertake a written final examination. This will be completed online using electronic invigilation software.

**vii. Communication**

The following opportunities for communication are provided to students in an attempt to enhance interaction between i. Student and faculty, ii. Student and student iii. Student and content:

- Webinars
- Q&A discussion forums
- Online chats
- Email
- Skype



DEPARTMENT OF PRIMARY CARE AND  
POPULATION HEALTH

MASTER OF PUBLIC HEALTH

**Study Guide**

MPH-521: Epidemiology and Prevention of Non-communicable and Infectious Diseases in a Global Context

Course Lead:

Dr Angeliki Lambrou

Course Contributor:

Dr Christiana Demetriou

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## Introductory note

This Study Guide is a basic supplement for the distance learning course MPH-521 'Epidemiology and Prevention of Non-communicable and Infectious Diseases in a Global Context', which is offered by the distance learning Master of Public Health (MPH) programme. The broad objective of the course is to cover in depth the descriptive and analytic epidemiology of major non-communicable and infectious diseases in a global context, highlighting aetiological models of disease development, as well as methodologies and initiatives for their prevention and control.

The aim of this Guide is to direct the students and help them into making systematic use of the educational material on which the teaching of the course is based. The Guide must be used in common with the Course Outline and with the educational material (recorded lectures, online tutorials, exercises, articles, and book chapters), as indicated for each section in the interactive e-Learning Platform of the course (Moodle). Students are advised to start their studying by the recorded course lecture for each topic, in order to take full benefit of the additional activities as listed in the current Guide and described in detail on the Moodle page of the course.

The current course includes **13 sections**. The course material will be made available on Moodle over a duration of **14 weeks**, including **1 study week** at the end of the semester. Each of these sections represents a core course topic and is composed of the following components:

- Learning Objectives and Outcomes
- Teaching Material
- Additional learning activities to complete
- Additional Support Material
- Key words

At the beginning of each study week, students are expected to familiarise themselves with the corresponding sections' objectives and learning outcomes, while they should go through the **teaching material** (recorded lectures) and conduct the **additional**

**learning activities.** Learning activities will have a designated start and end date and time, which will be communicated to students via email. Some activities will be synchronous (e.g. webinars, online chats), while others will be asynchronous (e.g. Q&A Fora). The former will involve direct live interaction (either chat or verbal/video) between students and tutor, as well as between students themselves (student-tutor, student-student interactions), while in the latter the aforementioned interactions will not be live. More details on learning activities are provided on Moodle (orientation week). Going through the teaching material and conducting the learning activities is essential, since it will help in clarifying and assimilating the material of the course as well as developing critical thinking on each topic.

In addition to the essential components described above, each section contains **additional support material**, comprising relevant bibliography (relevant textbooks and designated chapters), as well as relevant online resources (websites and other documents such as scientific articles) and online videos to watch. Additional support material found on Moodle is recommended for acquiring more in-depth knowledge of the relevant concepts, however these are not essential for addressing the section Learning Outcomes, nor for the relevant assessment. Students are strongly encouraged to go through these additional resources, as part of self-directed learning, which will facilitate deeper understanding and critical thinking on the topic of interest. The relevant online resources and videos could be updated and/or enriched during the semester.

All relevant resources and activities can be found on the Moodle page of the specific course. It is essential that you follow the specific Study Guide in combination with the course's Moodle page throughout the duration of the course, in order to organise your learning time efficiently and take full advantage of the learning material offered. You will have the opportunity to revise the course material at the end of the Semester, during the examination period.

We wish to acknowledge the contribution of Prof Takis Panagiotopoulos, Dr Behrooz Behbod, and Dr Dimitris Papamichail in preparation of the MPH-521 Course material. We are also very grateful for the contribution of Dr Christos Stylianides, Dr Annalisa Quattrocchi, Dr Danny Alon Ellenbogen, Prof Anne Merewood, Dr Elena Critselis and Dr Despo Ierodiakonou who participate as lecturers in our course.

## **Course Weekly Schedule**



<b>Week 1</b>	
Section 1	Epidemiology of major non-communicable conditions I: cardiometabolic and cerebrovascular conditions
<b>Week 2</b>	
Section 2	Epidemiology of major non-communicable conditions II: neoplastic conditions
<b>Week 3</b>	
Section 3	Epidemiology of major non-communicable conditions III: dementia and other neurodegenerative conditions
<b>Week 4</b>	
Section 4	Epidemiology of major non-communicable conditions IV: mental health conditions
<b>Week 5</b>	
Section 5	Epidemiological paradigms for the aetiology of non-communicable conditions
<b>Week 6</b>	
Section 6	Global health impacts of climate change and health benefits of climate mitigation strategies
<b>Week 7</b>	
Section 7	Emerging infectious diseases: current understanding
<b>Week 8</b>	
Section 8	Epidemiological surveillance: cornerstone for the organization of public health measures at the national and international level
<b>Week 9</b>	
Section 9	Special concepts in infectious diseases and spread dynamics
<b>Week 10</b>	
Section 10	Infectious disease epidemic investigation
<b>Week 11</b>	
Section 11	Epidemiology of major infectious diseases
<b>Week 12</b>	
Section 12	Measures for prevention and control of infectious diseases in the developed and developing world
<b>Week 13</b>	
Section 13	Migrant health and infectious diseases: epidemiological data and prevailing perceptions in modern societies
<b>Week 14</b>	
Study Week	

## Section 1 - Epidemiology of major non-communicable conditions I: cardiometabolic and cerebrovascular conditions

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in depth knowledge on the epidemiology of cardio metabolic and cerebrovascular conditions both in developed and developing countries, as well as principles of prevention for tackling these in either context.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the epidemiology of cardio metabolic and cerebrovascular conditions in the developed and the developing world.
2. Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiology of major non-communicable conditions I: Cardiometabolic & cardiovascular conditions)
- Recorded PowerPoint presentation (Epidemiology of major non-communicable conditions I: Famous Studies)

#### Additional learning activities to complete

- Welcome video by Course Lead (Introduction to the Course, outline of course objectives, introduction to the course lecturers)
- H5P Tool (**Mandatory Activity:** Cardiometabolic & cerebrovascular conditions)

**Description:** Students will enter a virtual environment where through activities with images and other types of enriched content, they will be asked to navigate through a revision of section material and a series of comprehension and application-based questions that can be answered interactively. The activity will improve students' understanding of course material and will give them an opportunity to apply their knowledge.

- Discussion Forum (Epidemiology of cardiometabolic & cerebrovascular conditions in a country of your choice)

**Description:** Students will be asked to share with their colleagues a description of the epidemiology of a cardiometabolic or cerebrovascular condition in a country of their choice. This activity will allow students to apply the knowledge they gained in this section to a particular disease and country, and it will also help them practice the critical skill of identifying reliable epidemiological sources and literature online, and how to use these to answer epidemiological questions.

## Additional Support Material

### Bibliography

- Remington LP, Brownson RC, Wegner MV. Chronic Disease Epidemiology, Prevention and Control (4th ed.). Washington DC: American Public Health Association; 2016. Chapters 1, 11-15.  
→ *Permalink for e-book:*  
<https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=836777>
- Detels R, Gulliford M, Abdool Q Karim, Tan CC. Oxford Textbook of Global Public Health (6th ed.). Oxford: Oxford University Press; 2015. Chapters 8.1, 8.4, 8.6.
- Stuckler D, Siegal K (Eds). Sick Societies: responding to the Global Challenge of Non-communicable Disease. Oxford: Oxford University Press; 2011. Chapters 1-4.

### Websites and Other relevant resources

- Global Burden of Disease (GBD 2019) <https://www.healthdata.org/gbd>
- GBD 2019 Stroke Collaborators. Global, regional, and national burden of stroke and its risk factors, 1990–2019: a systematic analysis for the Global Burden of

Disease Study 2019. Lancet Neurol. 2021 Oct;20(10):795-820.

([https://doi.org/10.1016/S1474-4422\(21\)00252-0](https://doi.org/10.1016/S1474-4422(21)00252-0))

- Roth et al. Global Burden of Cardiovascular Diseases and Risk Factors, 1990–2019: Update From the GBD 2019 Study. Journal of the American College of Cardiology. Volume 76, Issue 25, 22 December 2020, Pages 2982-3021.  
(<https://doi.org/10.1016/j.jacc.2020.11.010>)
- WHO Europe – European Health for All Database (HFA-DB)  
(<https://gateway.euro.who.int/en/datasets/european-health-for-all-database/#morbidity-disability-and-hospital-discharges>)
- World Health Organization. Regional Office for Europe. (2022). The European Health Report 2021. Taking stock of the health-related Sustainable Development Goals in the COVID-19 era with a focus on leaving no one behind. World Health Organization. Regional Office for Europe.  
(<https://apps.who.int/iris/handle/10665/352137>)
- WHO – Global report on Diabetes  
([http://apps.who.int/iris/bitstream/10665/204871/1/9789241565257\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/204871/1/9789241565257_eng.pdf?ua=1))
- WHO – Overweight and Obesity  
([http://www.who.int/gho/ncd/risk\\_factors/overweight/en/](http://www.who.int/gho/ncd/risk_factors/overweight/en/))
- European Commission – Major and Non-communicable Conditions  
([https://ec.europa.eu/health/non\\_communicable\\_diseases/overview\\_en](https://ec.europa.eu/health/non_communicable_diseases/overview_en))
- European Heart Network - European Cardiovascular Disease Statistics 2017  
(<http://www.ehnheart.org/cvd-statistics.html>)
- Eurostat – Cardiovascular Disease Statistics  
([http://ec.europa.eu/eurostat/statistics-explained/index.php/Cardiovascular\\_diseases\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Cardiovascular_diseases_statistics))
- Eurostat – Overweight and obesity - BMI statistics  
([http://ec.europa.eu/eurostat/statistics-explained/index.php/Overweight\\_and\\_obesity\\_-\\_BMI\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Overweight_and_obesity_-_BMI_statistics))

- Herrington W, et al. Epidemiology of Atherosclerosis and the Potential to Reduce the Global Burden of Atherothrombotic Disease. *Circ Res*. 2016;118:535-546. (<https://www.ahajournals.org/doi/pdf/10.1161/CIRCRESAHA.115.307611>)
- Aday & Matsushita. Epidemiology of Peripheral Artery Disease and Polyvascular Disease. *Circulation Research*. 2021;128:1818–1832 (<https://www.ahajournals.org/doi/10.1161/CIRCRESAHA.121.318535>)
- Ou, Z., Yu, D., Liang, Y. et al. Global burden of rheumatic heart disease: trends from 1990 to 2019. *Arthritis Res Ther* 24, 138 (2022). (<https://doi.org/10.1186/s13075-022-02829-3>)
- WHO - Noncommunicable Diseases Progress Monitor 2015 ([https://apps.who.int/iris/bitstream/handle/10665/184688/9789241509459\\_eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/184688/9789241509459_eng.pdf))
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- Institute of Health Equity - Fair Society Healthy Lives (The Marmot Review) (<http://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review> )
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**Key Words**

Non-communicable Disease Epidemiology, Cardio metabolic Disease, Cerebrovascular Disease.

## Section 2 – Epidemiology of major non-communicable conditions II: neoplastic conditions

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in depth knowledge on the epidemiology of different types of cancer both in developed and developing countries, as well as principles of prevention for tackling these in either context.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the epidemiology of malignancies in the developed and the developing world.
2. Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiology of major non-communicable conditions II: neoplastic conditions)
- Recorded PowerPoint presentation (Respiratory & musculoskeletal conditions)

### Additional learning activities to complete

- Q&A Forum (Neoplastic conditions)

**Description:** Students are asked to use section knowledge to attempt to answer a series of revision questions. This activity will help students become more familiar with the material.

- Webinar session (Epidemiology of neoplastic conditions in a country of your choice)

**Description:** Students will be asked to share with their colleagues a description of the epidemiology of a particular neoplastic condition in a country of their choice. This activity will allow students to apply the knowledge they gained in this section to a specific type of cancer and country, and it will also help them practice the critical skill of identifying reliable epidemiological sources and literature online, and how to use these to answer epidemiological questions.

## Additional Support Material

### Bibliography

- Remington LP, Brownson RC, Wegner MV. Chronic Disease Epidemiology, Prevention and Control (4th ed.). Washington DC: American Public Health Association; 2016. Chapters 1, 16.  
→ *Permalink for e-book:*  
<https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=836777>
- Detels R, Gulliford M, Abdool Q Karim, Tan CC. Oxford Textbook of Global Public Health (6th ed.) ONLINE. Oxford: Oxford University Press; 2015. Chapter 8.2.
- Stuckler D, Siegal K (Eds). Sick Societies: responding to the Global Challenge of Non-communicable Disease. Oxford: Oxford University Press; 2011. Chapters 1-4.

### Websites and Other relevant resources

- Global Burden of Disease (GBD 2019) <https://www.healthdata.org/gbd>
- Global Burden of Disease 2019 Cancer Collaboration – Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life Years for 29 Cancer Groups From 2010 to 2019: A Systematic Analysis for the Global Burden of Disease Study 2019  
<https://jamanetwork.com/journals/jamaoncology/fullarticle/2787350>
- GBD 2019 Cancer Risk Factors Collaborators – The global burden of cancer attributable to risk factors, 2010–19: a systematic analysis for the Global Burden of Disease Study 2019

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(22\)01438-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)01438-6/fulltext))

- Globocan (<http://globocan.iarc.fr/Default.aspx>)
- IARC – European Cancer Observatory (<https://ecis.jrc.ec.europa.eu/>)
- The Cancer Atlas (<http://canceratlas.cancer.org/>)
- European Commission – Major and Non-communicable Conditions ([https://ec.europa.eu/health/non\\_communicable\\_diseases/overview\\_en](https://ec.europa.eu/health/non_communicable_diseases/overview_en))
- WHO – Cancer (<http://www.who.int/cancer/en/>)
- WHO IARC – Cancer Epidemiology: Principles and Methods (<https://publications.iarc.fr/Non-Series-Publications/Other-Non-Series-Publications/Cancer-Epidemiology-Principles-And-Methods-1999>)
- WHO Europe – European Health for All Database (HFA-DB) (<https://gateway.euro.who.int/en/datasets/european-health-for-all-database/#morbidity-disability-and-hospital-discharges>)
- Eurostat – Cancer Statistics ([http://ec.europa.eu/eurostat/statistics-explained/index.php/Cancer\\_statistics](http://ec.europa.eu/eurostat/statistics-explained/index.php/Cancer_statistics))
- Cancer Research UK – Worldwide cancer statistics (<http://www.cancerresearchuk.org/health-professional/cancer-statistics/worldwide-cancer>)
- World Cancer Research Fund International - Data for cancer frequency by country (<http://www.wcrf.org/int/cancer-facts-figures/data-cancer-frequency-country>)
- WHO - Noncommunicable Diseases Progress Monitor 2015 ([https://apps.who.int/iris/bitstream/handle/10665/184688/9789241509459\\_eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/184688/9789241509459_eng.pdf))

### **Key words**

Non-communicable Disease Epidemiology, Cancer, Malignancies.

## Section 3 – Epidemiology of major non-communicable conditions

### III: dementia and other neurodegenerative conditions

#### Learning Objectives and Outcomes

##### Objectives

The specific section aims to provide students with in depth knowledge on the epidemiology of dementia and other neurodegenerative conditions both in developed and developing countries, as well as principles of prevention for tackling these in either context.

##### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the epidemiology of dementia and other neurodegenerative conditions in the developed and the developing world.
2. Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.

#### Teaching Material

##### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiology of major non-communicable conditions III: dementia)
- Recorded PowerPoint presentation (Epidemiology of major non-communicable conditions III: Parkinson's disease)

#### Additional learning activities to complete

- H5P Tool (Neurodegenerative diseases)

**Description:** Students will enter a virtual environment where through activities with images and other types of enriched content, they will be asked to navigate through a revision of section material and a series of comprehension and application based

questions that can be answered interactively. The activity will improve students' understanding of course material and will give them an opportunity to apply their knowledge.

- Discussion Forum (Epidemiology of neurodegenerative diseases in a country of your choice)

**Description:** Students will be asked to share with their colleagues a description of the epidemiology of a neurodegenerative disorder in a country of their choice. This activity will allow students to apply the knowledge they gained in this section to a particular disease and country, and it will also help them practice the critical skill of identifying reliable epidemiological sources and literature online, and how to use these to answer epidemiological questions.

### Additional Support Material

#### Bibliography

- Remington LP, Brownson RC, Wegner MV. Chronic Disease Epidemiology, Prevention and Control I (4th ed.). Washington DC: American Public Health Association; 2016. Chapters 1, 19.  
→ *Permalink for e-book:*  
<https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=836777>
- Detels R, Gulliford M, Abdool Q Karim, Tan CC. Oxford Textbook of Global Public Health (6th ed.) ONLINE. Oxford: Oxford University Press; 2015. Chapter 8.10.
- Stuckler D, Siegal K (Eds). Sick Societies: responding to the Global Challenge of Non-communicable Disease. Oxford: Oxford University Press; 2011. Chapters 1-4.

#### Websites and Other relevant resources

- Alzheimer's Disease International & WHO – Dementia: A Public Health Priority ([http://apps.who.int/iris/bitstream/10665/75263/1/9789241564458\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/75263/1/9789241564458_eng.pdf?ua=1))
- WHO –Dementia ([https://www.who.int/health-topics/dementia#tab=tab\\_1](https://www.who.int/health-topics/dementia#tab=tab_1))

- GBD 2019 Dementia Forecasting Collaborators – Estimation of the global prevalence of dementia in 2019 and forecasted prevalence in 2050: an analysis for the Global Burden of Disease Study 2019  
([https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(21\)00249-8/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00249-8/fulltext))
- Alzheimer’s Disease International - World Alzheimer Report 2021: Journey through the diagnosis of dementia (<https://www.alzint.org/resource/world-alzheimer-report-2021/>)
- Alzheimer's Association. 2016 Alzheimer's disease facts and figures. *Alzheimer's Dement.* 2016 Apr;12(4):459-509. doi: 10.1016/j.jalz.2016.03.001. PMID: 27570871.
- European Commission – Major and Non-communicable Conditions  
([https://ec.europa.eu/health/non\\_communicable\\_diseases/overview\\_en](https://ec.europa.eu/health/non_communicable_diseases/overview_en))
- Alzheimer Europe – Prevalence of Dementia in Europe (<http://www.alzheimer-europe.org/Research/European-Collaboration-on-Dementia/Prevalence-of-dementia/Prevalence-of-dementia-in-Europe>)
- WHO - Noncommunicable Diseases Progress Monitor 2015  
([https://apps.who.int/iris/bitstream/handle/10665/184688/9789241509459\\_eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/184688/9789241509459_eng.pdf))

### **Key words**

Non-communicable Disease Epidemiology, Dementia, Neurodegenerative Conditions.

## Section 4 – Epidemiology of major non-communicable conditions

### IV: mental health conditions

#### Learning Objectives and Outcomes

##### Objectives

The specific section aims to provide students with in depth knowledge on the epidemiology of mental health conditions both in developed and developing countries, as well as principles of prevention for tackling these in either context.

##### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the epidemiology of mental health conditions in the developed and the developing world.
2. Apply the principles of prevention for tackling major non-communicable disease epidemics and design preventive programmes for dealing with these in developed and developing countries.

#### Teaching Material

##### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiology of major non-communicable conditions IV: mental health conditions)

#### Additional learning activities to complete

- Interactive activity on the epidemiology of mental health conditions
- Webinar Session (Assignment support webinar: Summative written assessment on non-communicable disease prevention in developed versus developing countries)

## Additional Support Material

### Bibliography

- Remington LP, Brownson RC, Wegner MV. Chronic Disease Epidemiology, Prevention and Control (4<sup>th</sup> ed.). Washington DC: American Public Health Association; 2016. Chapters 1, 16.

➔ *Permalink for e-book:*

<https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=836777>

### Websites and Other relevant resources

- Global Burden of Disease (GBD 2019) <https://www.healthdata.org/gbd>
- GBD 2019 Mental Disorders Collaborators. Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet Psychiatry*. 2022 Feb;9(2):137-150. doi: 10.1016/S2215-0366(21)00395-3. Epub 2022 Jan 10. PMID: 35026139; PMCID: PMC8776563
- WHO. Mental Health. Available at: <https://www.who.int/news-room/factsheets/detail/mental-health-strengthening-our-response>
- WHO. Mental Disorders. Available at: <https://www.who.int/news-room/factsheets/detail/mental-disorders>

## Section 5 – Epidemiological paradigms for the aetiology of non-communicable conditions

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to cover and explain in detail the different epidemiological paradigms for the aetiology of non-communicable conditions.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Compare and contrast the major epidemiological paradigms for the aetiology of non-communicable conditions (adult life risk factors, early life biological programming, and life-course effects).

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiological paradigms for the aetiology of non-communicable conditions: adult life risk factors)
- Recorded PowerPoint presentation (Epidemiological paradigms for the aetiology of non-communicable conditions: early life programming)
- Recorded PowerPoint presentation (Epidemiological paradigms for the aetiology of non-communicable conditions: life-course epidemiology)

### Additional learning activities to complete

- Webinar Session (Preconception health and care)

**Description:** This webinar will introduce students to the concept of preconception health, in light of the epidemiological paradigms for disease prevention. The students will be asked to critically think of how to apply pre-conception health interventions using a systems-thinking approach and the bringing together of all components of the health system. Lastly, students will be asked to consider appropriate indicators to evaluate their intervention.

- Q&A Forum (**Mandatory Activity:** Epidemiological paradigms)  
**Description:** Students will be exposed to real life interventions and statements in published literature and will be asked to apply section knowledge in order to identify the epidemiological paradigms that gave rise to these interventions/statements. Furthermore, students will be asked to demonstrate critical thinking in identifying the supporting points as well as limitations of each epidemiological paradigm.

### Additional Support Material

#### Bibliography

- Remington LP, Brownson RC, Wegner MV. Chronic Disease Epidemiology, Prevention and Control (4th ed.). Washington DC: American Public Health Association; 2016. Chapters 1, 2, 5-10.  
→ *Permalink for e-book:*  
<https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=836777>

#### Websites and Other relevant resources

- Health Knowledge – Epidemiological Paradigms  
(<https://www.healthknowledge.org.uk/public-health-textbook/disease-causation-diagnostic/2a-epidemiological-paradigms>)
- Kuh D, et al. Life course epidemiology, *JECH* 2003; 57:778-783.  
(<http://dx.doi.org/10.1136/jech.57.10.778>)
- Yoav Ben-Shlomo, Rachel Cooper, Diana Kuh, The last two decades of life course epidemiology, and its relevance for research on ageing, *International Journal of Epidemiology*, Volume 45, Issue 4, August 2016, Pages 973–988  
(<https://doi.org/10.1093/ije/dyw096>)
- Simon C. Langlely-Evans. Developmental programming of health and disease, *Proc Nutr Soc.* 2006; 65(1): 97–105.  
(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1885472/>)
- Sutton EF et al. Developmental programming: State-of-the-science and future directions-Summary from a Pennington Biomedical symposium. *Obesity* (Silver

Spring). 2016 May;24(5):1018-26.

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4846483/>)

- Padmanabhan, Cardoso & Puttabyatappa, Developmental Programming, a Pathway to Disease, *Endocrinology*, Volume 157, Issue 4, 1 April 2016, Pages 1328–1340 (<https://doi.org/10.1210/en.2016-1003>)
- Skogen CJ and Øverland S. The fetal origins of adult disease: a narrative review of the epidemiological literature, *JRSM Short Rep.* 2012; 3(8): 59. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3434434/>)
- Leon DA. Biological theories, evidence, and epidemiology, *Int J Epidemiol* 2004; 33(6): 1167-1171. (<https://academic.oup.com/ije/article/33/6/1167/866758/Biological-theories-evidence-and-epidemiology>)

### Key words

Epidemiological Paradigms, Aetiology of Non-communicable Conditions, Adult-life, Early-life, Risk Factors, Biological Programming, Life-course.

## **Section 6 – Climate change and its impact on the epidemiology of major non-communicable and infectious conditions**

### **Learning Objectives and Outcomes**

#### **Objectives**

The specific section aims to provide students with an overview of the global impacts of climate change on the epidemiology of major non-communicable and infectious conditions, including the connection between habitat loss, impact on species and potential for zoonotic transmission. In addition, it will highlight the near-term health co-benefits that arise because of climate mitigation.

#### **Expected learning outcomes**

After the completion of this section, the students are expected to:

1. Evaluate how climate change can impact on the epidemiology of major non-communicable and infectious conditions, including the connection between habitat loss, impact on species and potential for zoonotic transmission.
2. Evaluate the near-term health co-benefits that arise because of climate mitigation at the individual, local, and global scales and provide examples of sectoral policies at the European and national level that can reduce greenhouse gas emissions and improve health.
3. Access and interpret relevant local, national, European, and global information and accurate science about climate change effects on health and the epidemiology of major non-communicable and infectious conditions.

### **Teaching Material**

#### **Recorded Lectures**

- Recorded PowerPoint presentation (Climate change and its impact on the epidemiology of major non-communicable and infectious conditions)

### Additional learning activities to complete

- Webinar Session (Identify and interpret relevant local, national, European, and global information and accurate science about climate change effects on health and the epidemiology of major non-communicable and infectious conditions)

**Description:** Students will be asked to identify and interpret relevant local, national, European, or global information and accurate science about climate change effects on health by applying this to a non-communicable or infectious disease of their choice. They will be asked to present the outcome of their research to their peers so as to stimulate discussion on the health impacts of climate change and how climate mitigation strategies are critical to safeguard the health of populations.

### Additional Support Material

#### Bibliography

- Frumkin H; Environmental Health: From Global to Local (3rd ed.), Wiley, (2016), Chapters 12, 13, 24.

→ *Permalink for e-book:*

<https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=4405576>

#### Websites and Other relevant resources

- WHO Fact sheets – Climate change and Health (<https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>)
- Fourth National Climate Assessment's Health Chapter (<https://nca2018.globalchange.gov/chapter/14/>)
- USGCRP Climate and Health Assessment ( <https://health2016.globalchange.gov/>)
- United Nations – Climate Action (<https://www.un.org/en/climatechange>)
- IPCC – AR5 Synthesis Report: Climate Change 2014, Topic 2.3 ([https://www.ipcc.ch/site/assets/uploads/2018/02/SYR\\_AR5\\_FINAL\\_full.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf))
- United Nations Sustainable Development Goals (<https://sdgs.un.org/goals>)
- United Nations Climate Change – The Paris Agreement (<https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>)

- A European Green Deal ([https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en))

**Key words**

Climate change, health, climate mitigation, sectoral policies.

## Section 7 – Emerging infectious diseases: current understanding

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in depth knowledge on emerging diseases and their understanding in developed societies.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the phenomenon of emerging infectious diseases, their determinants, and the current response approaches.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Emerging Infectious Diseases)

### Additional learning activities to complete

- Webinar Session (Assignment Guidelines: COVID-19 Student Country Profile)

**Description:** Students will be asked to prepare and present to their colleagues the basic descriptive epidemiology of COVID-19 in a country of their choice, including naming some of the known or possible determinants of the disease and describing the response activities that have been taken by the country. This activity will allow students to apply the knowledge they gained in this and in following sections to a particular disease and country, and it will also help them practice the critical skill of identifying reliable epidemiological sources and literature online, and how to use these to describe an emerging infectious disease. Students will also have to provide feedback to their peers' presentations.

- Webinar Session (Ebola Virus Disease)

**Description:** In this activity, the faculty member will share with students the experience and lessons learned from the emergence of Ebola virus disease and the approaches taken to contain its spread at an international level. This will familiarize

the students with the challenges involved in combating emerging diseases and how international response approaches are used to contain the spread.

## Additional Support Material

### Bibliography

- Nelson KE, Williams C. Infectious Disease Epidemiology: Theory and Practice (3rd ed.). Burlington, MA: Jones & Bartlett Learning; 2013. Chapters 13, 25.
- Heymann DL and Vernon JML. Emerging and re-emerging infections. In: Detels R, Gulliford M, Abdool Q Karim, Tan CC. eds. Oxford Textbook of Global Public Health (6th ed.) [Online] Oxford University Press; 2015. Section 8.17.
- Krämer A, Khan MdMH. Global Challenges of Infectious Disease Epidemiology. In: Krämer A. et al. eds. Modern Infectious Disease Epidemiology. Springer Science+Business Media LLC; 2010. DOI 10.1007/978-0-387-93835-6\_2.

### Websites and Other relevant resources

- Heymann DL. 2006. Control, elimination, eradication and re-emergence of infectious diseases: getting the message right. Bulletin of the World Health Organization. Available at: <https://apps.who.int/iris/handle/10665/269571>
- Lance S. et al. 2004. Globalization and infectious diseases: a review of the linkages. World Health Organization. Available at: <https://apps.who.int/iris/handle/10665/68726>
- National Institutes of Health (US). 2007. Biological Sciences Curriculum Study. Understanding Emerging and Re-emerging Infectious Diseases. NIH Curriculum Supplement Series [Internet]. Bethesda (MD): National Institutes of Health (US). Available at: <https://www.ncbi.nlm.nih.gov/books/NBK20370/>
- European Commission. Research & Innovation. Emerging and Re-Emerging Infectious Diseases. Available at: [https://research-and-innovation.ec.europa.eu/research-area/health/emerging-and-reemerging-infectious-diseases\\_en](https://research-and-innovation.ec.europa.eu/research-area/health/emerging-and-reemerging-infectious-diseases_en)
- CDC. Emerging Infectious Diseases. Available at: <https://wwwnc.cdc.gov/eid/>

- Nii-Trebi NI. Emerging and Neglected Infectious Diseases: Insights, Advances, and Challenges. *BioMed Research International*. 2017. Article ID 5245021. Available at: <https://doi.org/10.1155/2017/5245021>
- Paules CI, Fauci AS. Emerging and Reemerging Infectious Diseases: The Dichotomy Between Acute Outbreaks and Chronic Endemicity. *JAMA*. 2017; 317(7), pp. 691-2. Available at: <http://jamanetwork.com/journals/jama/article-abstract/2598516>
- Morens, DM, Fauci AS. Emerging Infectious Diseases: Threats to Human Health and Global Stability, *PLOS Pathogens* 7. 2013. Available at: <https://doi.org/10.1371/journal.ppat.1003467>
- Fauci AS. Emerging and reemerging infectious diseases: the perpetual challenge. *Acad Med*. 2005; 80(12), pp. 1079-85. Available at: [https://journals.lww.com/academicmedicine/Fulltext/2005/12000/Emerging\\_and\\_Reemerging\\_Infectious\\_Diseases\\_The.2.aspx](https://journals.lww.com/academicmedicine/Fulltext/2005/12000/Emerging_and_Reemerging_Infectious_Diseases_The.2.aspx)
- Fauci AS. It Ain't Over Till It's Over...but It's Never Over — Emerging and Reemerging Infectious Diseases. *N Engl J Med* 2022; 387:2009-2011. Available at: <https://www.nejm.org/doi/full/10.1056/NEJMp2213814>

### Key words

Emerging infectious diseases, Response approaches, Developed countries

## Section 8 – Epidemiological surveillance: cornerstone for the organization of public health measures at the national and international level

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in-depth knowledge regarding the principles and methods of epidemiological surveillance.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the main objectives of epidemiological surveillance and distinguish its major types.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiological surveillance: cornerstone for the organization of public health measures at the national and international level)

### Additional learning activities to complete

- Webinar Session (Setting up a surveillance system)  
**Description:** In this activity, the faculty member will share with students - using a real-life example - the process, considerations and challenges in setting up a surveillance system. This will familiarize the students with the complexities involved in the process and how the set-up of the system can support its success or failure.

### Additional Support Material

#### Bibliography

- Detels R, Gulliford M, Karim, QA, Tan CC. Oxford Textbook of Global Public Health. 6th ed. Oxford University Press; 2015. Section 5.19.

- Giesecke J. Modern Infectious Disease Epidemiology. 3<sup>rd</sup> ed. CRC Press; 2017.  
Chapter 13.  
→ *Permalink for e-book:*  
<http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=1769168>

#### **Websites and Other relevant resources**

- CDC. Principles of Epidemiology in Public Health Practice. 3<sup>rd</sup> ed. 2006. Updated 2012: Self-Study Course SS1978 - Lesson 5: Public Health Surveillance. Available at: <https://www.cdc.gov/csels/dsepd/ss1978/lesson5/index.html>
- European Centre for Disease Prevention and Control (ECDC). 2008. Surveillance of Communicable Diseases in the European Union. A long-term strategy: 2008-2013. Available at:  
<https://www.ecdc.europa.eu/sites/default/files/documents/surveillance-communicable-diseases-long-term-strategy-2008-2013.pdf>

#### **Key words**

Epidemiological surveillance, Types of surveillance, Passive, Active, Sentinel, Syndromic

## Section 9 – Special concepts in infectious diseases and spread dynamics

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in depth knowledge on special concepts in infectious diseases and spread dynamics.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the characteristics of incubation period, transmission, and communicability of microbes and relate these with the spread of diseases in the population.

#### Teaching Material

- Recorded PowerPoint presentation (Special concepts in infectious diseases)
- Recorded PowerPoint presentation (Spread dynamics)

#### Additional learning activities to complete

- Q&A Forum (Differentiating between the main concepts in infectious diseases)  
**Description:** This activity expects students to give examples of infectious diseases that fit certain criteria in order to test their understanding of the covered infectious disease concepts. This activity will help students apply their knowledge in identifying real-life examples of diseases characterized by specific concepts, helping them see the relevance of these concepts in infectious disease epidemiology.
- Q&A Forum (**Mandatory Activity:** Identifying the Chain of Infection)  
**Description:** Through the identification of appropriate and credible sources and references students are asked to identify the chain of infection of different infectious diseases. The activity will improve students' understanding of course material and will give them an opportunity to apply their knowledge.

## Additional Support Material

### Bibliography

- Giesecke J. Modern Infectious Disease Epidemiology. 3<sup>rd</sup> ed. CRC Press; 2017. Chapters 2, 11, 14, 17.  
→ *Permalink for e-book:*  
<http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=1769168>
- Nelson KE, Williams C. Infectious Disease Epidemiology: Theory and Practice (3<sup>rd</sup> ed.). Burlington, MA: Jones & Bartlett Learning; 2013. Chapters 2, 5, 6.

### Websites and Other relevant resources

- WHO. Communicable diseases. Available at: <https://www.who.int/health-topics>
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### Key words

Infectious disease epidemiology, Incubation period, Transmission, Communicability, Spread.

## Section 10 – Infectious disease epidemic investigation

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in-depth knowledge regarding the types of epidemics and the principles and methods of infectious disease epidemic investigation.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the modes of epidemic initialisation and the types of epidemics.
2. Apply all steps of an outbreak investigation considering the main objectives of infectious disease epidemic investigation.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Epidemics and infectious disease outbreak investigation)

### Additional learning activities to complete

- Webinar Session (Case study on infectious disease event)  
**Description:** This activity will navigate students through a real-life infectious disease event (outbreak/epidemic/pandemic etc.) and will expose them to the steps involved in the investigation of such an event. The purpose of this activity is to enable students via their active participation and interaction through questions and discussion to describe the methodology underlying an epidemic investigation.
- Q&A Forum (**Mandatory Activity:** Disease epidemic occurrence)  
**Description:** Students are expected to apply the material covered in this section to answer questions regarding disease epidemic occurrence. This activity will help reinforce students' knowledge and will enable them to practice critical thinking in applying the concepts learned.

## Additional Support Material

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### Key words

Types of epidemics, Epidemic/Outbreak investigation

## Section 11 – Epidemiology of major infectious diseases

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to provide students with in depth knowledge on the epidemiology of major infectious diseases in the developed and developing countries.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the major epidemiological characteristics of selected major infectious diseases for public health (e.g. HIV/AIDS, tuberculosis, influenza, diarrhoeal disease, malaria) in the developed and developing world.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Epidemiology of major infectious diseases I)
- Recorded PowerPoint presentation (Epidemiology of major infectious diseases II)

### Additional learning activities to complete

- Webinar Session (COVID-19 Student Country Profile Presentations)  
**Description:** Students will present to their colleagues the basic descriptive epidemiology of COVID-19 in a country of their choice, including naming some of the known or possible determinants of the disease and describing the response activities that have been taken by the country. This activity will allow students to apply the knowledge they gained in course sections to a particular disease and country, and it will also help them practice the critical skill of identifying reliable epidemiological sources and literature online, and how to use these to describe an emerging infectious disease. Students will provide feedback to their peers and exchange views on different countries' experiences on COVID-19 pandemic and response.

- Q&A Forum (Epidemiology of infectious diseases)

**Description:** Students are asked to use the taught material, as well as credible online resources, to critically think about and identify risk and protective factors that contribute to the epidemiology of infectious diseases - geographic variability, individual susceptibility, variable prognosis etc.

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**Key words**

Epidemiology of infectious diseases, Developed countries, Developing countries.

## Section 12– Measures for prevention and control of infectious diseases in the developed and developing world

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to explain in detail the measures for prevention and control of infectious diseases in the developed and developing world.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Apply modes of prevention and control of infectious diseases and relevant measures and relate these with the mode of transmission.
2. Evaluate the objectives and the content of the Expanded Program on Immunization (EPI) of the World Health Organization.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Measures of prevention and control of infectious diseases)
- Recorded PowerPoint presentation (Expanded Program on Immunization)

#### Additional learning activities to complete

- Webinar Session (Measures of prevention and control taken in real case scenario)  
**Description:** This activity will navigate students through measures of prevention and control taken in a real-life case scenario. The purpose of this activity is to enable students to appreciate how the taught knowledge/concepts can be applied in real life in the efforts to control infectious diseases.
- Online chat (**Mandatory Activity:** Control of real-life outbreak or infectious disease event)

**Description:** Students will be exposed to a published article and will be asked to use sections' material as well as to look for additional literature to identify how the real-life outbreak or infectious disease event was controlled. This activity will engage students in written discussions over the methodology used to identify and control an infectious disease event. The purpose of this activity is to enable students to critically read published literature and to identify the concepts and methodology taught in a real-life infectious disease event.

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### **Key words**

Modes of prevention, Modes of control, Mode of transmission, Developed countries, Developing countries, Expanded Program on Immunization.

## Section 13– Migrant health and infectious diseases: epidemiological data and prevailing perceptions in modern societies

### Learning Objectives and Outcomes

#### Objectives

The specific section aims to cover and explain in detail the epidemiological data and prevailing perceptions in modern societies regarding migrant/refugee health concerning infectious diseases.

#### Expected learning outcomes

After the completion of this section, the students are expected to:

1. Analyse the 'epidemiological profile' of migrants/refugees and the healthy immigrant effect and critically evaluate the myths prevailing regarding this specific issue in modern societies.

### Teaching Material

#### Recorded Lectures

- Recorded PowerPoint presentation (Migrant health and infectious diseases)

#### Additional learning activities to complete

- Webinar Session (Migrant crisis in Europe and healthy immigrant effect)  
**Description:** This webinar provides an overview of the recent migrant crisis in Europe and how it affects the health of populations. The facts, challenges and health effects will be supported through the provision of recent statistics that paint a realistic picture of the migrant crisis in Europe.
- Discussion Forum (Migrant Health)  
**Description:** Students are provided with references and other online resources and are asked to explore these in order to interactively discuss the potential barriers refugees and migrants may have in accessing health care services in the host countries. Through this exercise students will gain skills in searching and critically

appraising the literature in order to identify answers to timely questions of public health interest.

## Additional Support Material

### Bibliography

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### **Key words**

Migrant/refugee health, Infectious diseases, Healthy Immigrant Effect, Perceptions, Stereotypes

## Assessment

This course is assessed via a combination of attendance and participation in webinars and mandatory interactive activities (comprising 10% of total course marks), coursework (comprising 30% of total course marks) and a final comprehensive examination (comprising 60% of total course marks). In addition, the students will have the opportunity to undergo formative assessment, as a means of familiarising with the summative examination, as well as evaluating their performance in the course and receiving feedback from the course's tutor(s).

### **Participation and engagement in webinars and mandatory interactive activities**

The Participation Grade will constitute 10% of the *total course marks* and will be awarded based on i) webinar attendance and participation and ii) participation in five (5) learning activities. Participation includes active engagement in synchronous activities, such as webinars, and online chats; and/or successful completion of mandatory in-course interactive activities, such as discussion fora, Q&A fora, short quizzes and problem-solving scenarios. The mandatory interactive activities that will be used for this course are clearly stated under each section of this study guide.

### **Coursework**

The MPH-521 course comprises of the following coursework:

- Summative assignment on non-communicable disease prevention in developed versus developing countries (*30% of total course marks*)

Detailed information and guidelines on the above coursework will be uploaded on the course's Moodle page. All course work will be submitted via Moodle and marks will be communicated to students electronically. A Dedicated Assignment Support Webinar will be offered prior to the submission of the assignment, with the purpose of answering student questions relevant to the content of the assignment, as well as the submission process.

### **Final Examination**

The MPH-521 final examination is a comprehensive exam assessing the specific learning outcomes (LOs) from all course sections. Since the exam is constructed explicitly based on the course's learning outcomes, students are strongly advised to follow an LO-driven approach while revising and preparing for the final examination. Students should be expected to be able to answer a given question on any LO covered during the course.

Final examinations will be completed online using electronic invigilation software. More information will be shared with you closer to the examination week.

### **Formative quiz and feedback**

Students will have the opportunity to attempt a formative quiz, which although not contributing to the course's total marks (i.e. formative), is compulsory. The purpose of the formative quiz is for students to: (a) evaluate their performance and understanding/assimilation of the learning material up to the point of the quiz; (b) familiarize themselves with the level and format of the course's exams; and (c) receive valuable feedback from the course tutor(s) on their performance, as well as guidance on how to improve. The formative quiz will be conducted via Moodle.

### **Self-assessment exercises**

#### **Short Answer Question (SAQ):**

Define and describe **adult life risk factors** as an epidemiological paradigm. **[2 marks]**

Provide **one limitation** of this paradigm. **[2 marks]**

**SAQ Model Answer:**

The impact of behaviours, such as smoking, diet, exercise and alcohol consumption, on the onset and progression of diseases in adulthood. **[1 mark]**

Considers the aetiology of chronic disease to be primarily as a result of adult behaviours and risk factors. **[1 mark]**

Limitation: Adult risk factor approach emphasises an individual's lifestyle as a cause and solution of health problems but ignores the broader determinants of health and therefore does not take account of the more complex social factors that are associated with an individual's behaviour and lifestyle. **[2 marks]**

**Single Best Answer (SBA) question**

Since 2015, a large volume of refugees/migrants entering continental Europe have challenged EU public health authorities. Refugees/migrants often gather in spontaneous unstructured camps and/or they are hosted in facilities run by governments or NGOs while health care is often offered by mobile or temporary health care units. Crowded living situations in refugee/migrant accommodations favour communicable disease spread.

Assuming you are the head epidemiologist in a hosting country, which type of surveillance would you prefer to set up in this context?

- A. Surveillance based on diagnoses of diseases reported by all the migrant health care units
- B. Syndromic surveillance based on symptoms and signs reported by all the migrant health care units
- C. Laboratory-based surveillance
- D. Sentinel surveillance in selected migrant health care units
- E. Event-based surveillance based on social media reports

**SBA notes on answer options:**

**A. Surveillance based on diagnoses of diseases reported by all the migrant health care units.** Wrong answer. In this context, early detection of outbreaks is very important to avoid further spread. Diagnosis of diseases may take time especially if laboratory confirmation is needed.

**B. Syndromic surveillance based on symptoms and signs reported by all the migrant health care units.** Correct answer. In this context, the syndromic approach is the preferred method as reporting does not need to wait for a diagnosis to be made, thus early detection improves public health situational awareness and can lead to timely public health action.

**C. Laboratory-based surveillance.** Wrong answer. Laboratory-based surveillance is based on laboratory test results. Laboratory confirmation usually takes time and, in this context, early detection is important to prevent outbreaks. Moreover, the laboratory capacity of temporary or mobile health care units is usually reduced.

**D. Sentinel surveillance in selected migrant health care units.** Wrong answer. Reporting of health events by health professionals in selected migrant health care units to estimate trends in the larger population is not ideal in this situation. It is not only important to monitor the morbidity trends in the total population of refugees/migrants but also to be able to detect outbreaks wherever they might occur.

**E. Event-based surveillance based on social media reports.** Wrong answer. Social media data are, in essence, observational data of online communications and were not designed for public health purposes. Event-based surveillance provides additional data sources given public health surveillance systems are already in place. Moreover, internet access is not usually available in the refugee/migrant accommodation sites.